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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/675,139	09/30/2003	Russell A. Budd		5721

7590  
Thomas A. Beck Esq.  
6136 West Kimberly Way  
Glendale, AZ 85308

07/17/2007

EXAMINER

LOUIE, WAI SING

ART UNIT	PAPER NUMBER
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2814

MAIL DATE	DELIVERY MODE
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07/17/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/675,139	BUDD ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Wai-Sing Louie	2814	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 June 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-49 is/are pending in the application.
- 4a) Of the above claim(s) 11-49 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Election/Restrictions*

Applicant's election without traverse of Species I, which is drawn to claims 1-10, in the reply filed on 6/26/2007, is acknowledged. The restriction is final. It is suggested that non-elected claims be canceled in the response to this Office Action.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4 and 6-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Geusic et al. (US 6,777,715) in view of Kikuchi et al. (US Pub. 2003/0142896).

With regard to claims 1 and 10, Geusic et al. disclose an integrated circuit using optical waveguide interconnection through a semiconductor wafer (col. 3, line 35 et seq. and fig. 1a) comprising:

- A substrate (wafer) 100a having a top surface and a bottom surface (fig. 1a);
- A through via (waveguide) 102a extending vertically from the top surface to the bottom surface (col. 4, lines 1-7 and fig. 1a);

- Light-emitting 104a and receiving elements 106a aligned to the vertical waveguide 102a (col. 4, lines 21-27 and fig. 1a);
- Geusic et al. do not disclose the waveguide 102a having a sidewalls covered with a layer of low refractive index material and substantially or fully filled with a high refractive index material to form a core layer. However, Kikuchi et al. disclose the waveguide 4 is cladded with a low refractive index layer 7 and the core layer 6 surrounded by the clad layer 7 is a high refractive index material (Kikuchi paragraph [0064]). Kikuchi et al. teach the waveguide formed by the high and low refractive index layers would confine the signal light within the core layer and propagates along a direction of the waveguide (Kikuchi paragraph [0005]).

Therefore, it would have been obvious to one of ordinary skill in the art to modify Geusic's device with the teaching of Kikuchi et al. to provide a low refractive index clad layer surrounding the high refractive index core layer in order to confine the signal light within the core layer and propagates along a direction of the waveguide;

- Kikuchi et al. disclose the annular waveguide core has a desired dimension (Kikuchi paragraph [0100]).

With regard to claim 2, Geusic et al. disclose the wafer is a semiconductor substrate (col. 3, lines 55-65) and the optical device 104a formed on the wafer is gallium arsenide and the optical receiver 106a is silicon (col. 4, lines 21-36). Therefore, the semiconductor wafer could be silicon or gallium arsenide.

With regard to claim 3, Geusic et al. modified by Kikuchi et al. disclose the layer of low refractive index cladding layer 7 is organic resin (Kikuchi paragraph [0064]).

With regard to claim 4, Geusic et al. modified by Kikuchi et al. disclose the layer of high refractive index core layer 6 is organic resin (Kikuchi paragraph [0064]).

With regard to claims 6-7 and 9, Geusic et al. disclose the light receiving element 106a is optical fiber (col. 2, line 65) and photodiode (col. 4, line 33).

With regard to claim 8, Geusic et al. modified by Kikuchi et al. disclose the light signal source is a laser diode (Kikuchi paragraph [0064]).

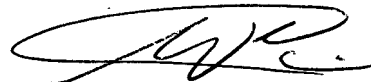
Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Geusic et al. (US 6,777,715) modified by Kikuchi et al. (US Pub. 2003/0142896) as applied to claim 1 above, and further in view of Ghoshal et al. (US Pub. 2004/007639).

With regard to claim 5, Geusic et al. modified by Kikuchi et al. disclose the cladding layer and core layer are made of organic resin, but do not disclose the organic resin is selected from the group consisting of acrylate polymers, siloxane polymers and vapor disposed polymer layers. However, organic resin (polymer) is a generic term, which includes acrylate resins or siloxane resins. As evidence, Ghoshal et al. disclose an optical waveguide having a clad layer and a core layer made of acrylate or siloxane resin (Ghoshal paragraph [0017] and [0036]). Ghoshal et al. changes the refractive index by changing the weight percentage of the acrylate or siloxane resins (Ghoshal paragraph [0036] to [0041]).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wai-Sing Louie whose telephone number is (571) 272-1709. The examiner can normally be reached on 7:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



WAI-SING LOUIE  
PRIMARY PATENT EXAMINER

Wsl  
July 11, 2007